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CLAIMS

1. An apparatus for heat sealing a lidding sheet to a base, the apparatus including:
 - 5 a press for pressing a lidding sheet onto a sealing surface of a base; wherein the press includes a relatively flexible face plate and the apparatus further includes a system for applying pressure to the lidding sheet with the face plate, the face plate flexing to conform to the lidding sheet and the underlying profile of the sealing surface of the base.
- 10 2. An apparatus according to claim 1 further including:
 - a support plate for supporting a back surface of the base opposite the sealing surface.
- 15 3. An apparatus according to claim 1 or 2 wherein the face plate comprises a flexible membrane with a first surface for pressing the lidding sheet, the system being arranged to selectively provide pressurised fluid to a second surface of the flexible membrane, the second surface being opposite said first surface.
- 20 4. An apparatus according to claim 3 wherein the fluid is pressurised in the range of 2 bar to 200 bar.
- 25 5. An apparatus according to claim 3 or 4 wherein the press further includes walls which define with the second surface a chamber for receiving the pressurised fluid.
6. An apparatus according to claim 3, 4 or 5 wherein the pressurised fluid is at an elevated temperature suitable for achieving heat sealing.
- 30 7. An apparatus according to claim 3, 4 or 5 wherein the fluid is a high conductivity fluid such as mercury or a bismuth alloy with low melting point.

8. An apparatus according to claim 5 wherein the chamber includes at least one inlet and at least one outlet such that fluid may be pumped in through the inlet and out through the outlet.
- 5 9. An apparatus according to claim 8 wherein the system is arranged to pump hot fluid in the inlet so as to heat the flexible membrane and lidding sheet for sealing and then to pump cold fluid in the inlet so as to force the hot fluid out through the outlet and thereby cool the flexible membrane and lidding sheet.
- 10 10. An apparatus according to claim 9 wherein the system provides hot fluid in the range of 100°C to 250°C.
11. An apparatus according to claim 9 or 10 wherein the system provides cold
15 fluid in the range of 0°C to 30°C.
12. An apparatus according to claim 5 wherein the chamber is a fully filled closed volume in which the fluid is pressurised by pressing the first surface against the lidding sheet.
- 20 13. An apparatus according to any preceding claim wherein the face plate is stainless steel.
14. An apparatus according to any preceding claim wherein the face plate has a
25 thickness in the range of 0.01mm to 0.5mm.
15. An apparatus according to claim 13 wherein the face plate has a thickness in the range of 0.03mm to 0.1mm.
- 30 16. An apparatus according to any preceding claim for heat sealing a lidding sheet to a base having at least one pocket wherein the face plate is reinforced in an area to

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be positioned opposite said at least one pocket so as to at least reduce deflection of the face plate into the pocket.

17. An apparatus according to claim 14 wherein the face plate is reinforced by pre-forming said area as a dome, recessed on the sealing side.

18. An apparatus according to any preceding claim wherein the apparatus is arranged to compensate for angular misalignment of the face plate and the sealing surface of the base.

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19. A method of heat sealing a lidding sheet to a base, the method including: positioning a lidding sheet against the sealing surface of a base; providing a relatively flexible face plate adjacent the lidding sheet; and applying pressure to the lidding sheet with the face plate such that the face plate flexes to conform to the lidding sheet and the underlying profile of the sealing surface of the base.

20. A method according to claim 19 using a flexible membrane as the face plate and further including providing pressurised fluid behind the flexible membrane to flex the flexible membrane and apply pressure to the lidding sheet.

21. A method according to claim 20 further including: rapidly exchanging the pressurised fluid from hot fluid to cold fluid so as to rapidly heat and then cool the face plate whilst maintaining pressure to the lidding sheet.

22. A method according to claim 21 wherein preheated hot fluid is flowed behind the flexible membrane whilst maintaining the pressure of this fluid at the sealing pressure and then the flow is switched to a pre-cooled fluid at the same pressure for cooling of the lidding sheet and seal.

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23. A method according to claim 19 or 20 further including:
rapidly heating and then cooling the face plate whilst maintaining pressure to the lidding sheet.
- 5 24. A method according to claim 19 using a flexible membrane as the face plate and further including providing fluid behind the flexible membrane and pressurizing the fluid by pressing the flexible membrane against the lidding sheet.
25. A method according to claim 19, 20 or 24 wherein the fluid is a high
10 conductivity fluid, such as mercury or bismuth alloy of low melting point, for rapidly cooling the face plate and lidding sheet.
26. A method of heat sealing a lidding sheet to a base, the method including:
positioning a lidding sheet against the sealing surface of a base;
15 providing a face plate adjacent the lidding sheet; and
applying pressure to the lidding sheet with the face plate whilst heating and cooling the lidding sheet so as to heat seal the lidding sheet to the base.